

Southwest Lassen Watershed Improvement Project

Lassen National Forest

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Background

The Lassen National Forest (LNF) has a goal to efficiently increase the pace and scale of restoration projects in light of tightening budgets and the backlog of areas needing treatment. Roads are among the most valuable infrastructure maintained on national forests; while at the same time, they can create the greatest impact to the aquatic environment. Fortunately, the Forest Service has proven and predictable techniques to improve roads while reducing aquatic impacts, and approved projects with environmental clearance have an enormous advantage in garnering available funds.

Project Area

Proposed treatment sites are located on LNF lands within the west-flowing watersheds south of the Pit River Drainage, referred to as “southwest watersheds”, which encompass 452,600 acres. The southwest watersheds contain important tributaries that drain into the Sacramento River. The tributaries include the upper Feather River and seven anadromous fish-producing watersheds: Old Cow, Battle, Antelope, Mill, Deer, Big Chico, and Butte. LNF lands in the anadromous-fish-producing watersheds are under special management direction contained in the *Long-Term Strategy for Anadromous Fish-Producing Watersheds* (herein referred to as the “Long-Term Strategy”) described in the 2001 *Sierra Nevada Forest Plan Amendment (SNFPA) Final Environmental Impact Statement (FEIS)*. The Long-Term Strategy designated five watersheds (Battle, Antelope, Mill, Deer, and Butte) as “key” watersheds, where priority on LNF lands is to protect and/or restore federally listed anadromous fish and their habitat and give priority consideration for watershed restoration. The southwest watersheds provide habitat for other aquatic species of recreational and conservation importance as well, including resident salmonids (such as rainbow trout), amphibians and mollusks.

Purpose and Need

The purpose and need of the Southwest Lassen Watershed Improvement Project is to provide unimpeded passage for resident aquatic organisms at existing road crossings; reduce chronic and potential sediment sources where roads or non-National Forest System (NFS) routes¹ channel sediment to streams; improve crossings to accommodate bedload and stormflows; and improve riparian area conditions affected by non-NFS routes.

Roads are a dominant feature of landscapes that have altered aquatic ecosystems and the habitat upon which aquatic organisms are dependent. Where roads intersect streams, crossings often have culverts that allow streams to drain under roads but pose barriers to passage of aquatic organisms. In addition, roads may impact streams through increases in sediment delivery; and

¹ Non-NFS routes include trails and roads that were not identified for incorporation into the system in the 2010 Lassen National Forest Motorized Travel Management Record of Decision.

culverts at stream crossings are often undersized and unable to accommodate large storm events, including associated bedload and debris. Debris can plug undersized culverts and increase the risk of road failure, which could send sediment into downstream channels. Excess sediment into waterways, either from chronic sources or road failures, can reduce the quality and quantity of habitat available to aquatic organisms. Some non-NFS routes do not cross streams, but when they are located near water features they may impact riparian conditions and/or contribute sediment.

The LNF Land and Resource Management Plan (LRMP), as amended, includes direction to implement restoration actions to maintain, restore or enhance water quality and maintain, restore or enhance habitat for riparian and aquatic species (SNFPA ROD).

Proposed Action

The LNF proposes a limited set of activities that could be implemented to address the needs described above. The activities can be categorized into two different types (activities at road-stream intersections and rehabilitation of non-NFS routes), and they include the following:

Activities at road-stream intersections

- Stream reconstruction activities (only for some low-water crossing installations and culvert replacements)
- Low-water crossing installations
- Culvert replacements
- Road surfacing
- Road outsloping
- Drainage structure maintenance
- Armoring culvert inlets/outlets/ditches
- Drainage structure appurtenance installations
- Improvement of culvert outlets to improve passages
- Rolling dips
- Diversion prevention dips

Rehabilitation of non-NFS routes

- Culvert/road-fill removal and channel restoration
- Water bar installations
- Boulder installations
- Vegetation re-establishing
- Re-contouring routes prisms
- De-compacting route surfaces

The Forest proposes to undertake these activities at approximately 260 road-stream intersection points and 150 non-NFS routes. The maps (available online at <https://www.fs.usda.gov/project/?project=54111>) display the location of the potential project sites. This project may implement any one, a combination of, or none of the identified activities at these sites based on site-specific conditions and consistent with specific integrated design features (IDFs). Roads may be temporarily closed during project activities; however, public access would remain the same as existing once activities are complete.

Integrated Design Features

The following integrated design features are the resource protection measures the Forest would follow for this project, organized according to resource:

General

1. Culvert removal and replacement projects on perennial channels will be limited to no more than five per year within fifth-field anadromous fish-producing watersheds.
2. In-channel road/watershed improvement activities will be conducted during the dry season, including summer months or periods of minimal runoff and low flow conditions (e.g. fall).
3. Where applicable, all road-stream crossing structures shall simulate stream channel conditions per *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings* (USDA-Forest Service 2008), located at: http://stream.fs.fed.us/fishxing/aop_pdfs.html
4. Crossings shall be designed using an interdisciplinary design team consisting of an experienced and appropriately trained Engineer, Fisheries Biologist, and Hydrologist/Geomorphologist.
5. The project fisheries biologist/hydrologist will ensure that project design criteria are incorporated into implementation contracts.
6. At stream road crossings where culvert replacement activities will be implemented and an existing site has been used for water drafting, retention of the drafting site will only occur at designated locations that meet best management practices (BMPs) or at designated sites where maintenance is needed to meet BMP standards.
7. The integrity of unique habitats shall be maintained or restored. Unique habitats [may] include meadows, fens, seeps and springs. This shall be accomplished by incorporating no disturbance buffers around these features.

Botany

Rare and Sensitive Plants

1. *Pre-Implementation:* Proposed restoration projects shall be completely surveyed early in the implementation planning process by a qualified botanist or rare plant technician, to identify and assess any sensitive or rare plant populations or habitats.
2. *Pre-Implementation:* Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction and other operational activities shall not be allowed in any documented sensitive plant sites unless it is for the demonstrated benefit or protection of the site.
3. All sensitive plant populations would be avoided from all operational activities where topography does not restrict such a distance. Sensitive plant sites and any associated buffers shall be identified as Control Area within in contract maps.

Invasive Plant Species

1. *Pre-Implementation:* Proposed restoration projects shall be surveyed for invasive plants early in the implementation planning process by a qualified invasive plant specialist, to identify and assess any undocumented invasive plant infestations.
2. *Pre-Implementation:* For project areas that overlap or are adjacent to invasive plant infestations, assure that there is sufficient time prior to develop a long-term site strategy for control, eradication, and revegetation of the site. This shall be accomplished by a qualified invasive plant specialist in collaboration with the interdisciplinary team and other stakeholders.
3. All activities shall be conducted in a manner as to minimize or prevent the potential spread or establishment of invasive species.
4. Prior to implementation, infestations located within or adjacent to proposed treatments sites that cannot be avoided, would be treated and associated soil would be stockpiled separately from project activities and tarped. Top soil would not be spread back on the site until the infestation has been eradicated.
5. Actions conducted on National Forest System Lands that will operate outside the limits of the road prism, require the cleaning of all heavy equipment (e.g., bulldozers, graders, backhoes, dump trucks, etc.) prior to entering the National Forest. Cleaning will be inspected and approved by the forest officer in charge of administering the project.
6. All materials are weed-free. Use weed-free straw and mulch for all projects conducted or authorized by the Forest Service on National Forest System Lands.
7. Inspect active gravel, fill, quarry sites and borrow material for invasive plants before use and transport. Use only gravel, fill, and/or rock that are judged to be weed-free by Forest invasive plant specialists.
8. Prohibit heavy equipment operation, vehicle travel, staging areas and any other operational activities in invasive plant infestations, and less treated as described above.
9. Conduct post-implementation monitoring for invasive plants. Continue monitoring, treating, and removing invasive plants until all infestations are eradicated and native plant species are well established.

Native Plant Materials and Revegetation

1. *Pre-Implementation:* Where the need for native plant materials is anticipated, assure that there is sufficient time for the plant materials specialist to develop a native plant materials plan and/or prescription prior to implementation of planned revegetation, rehabilitation, and restoration projects. This may include allowing for enough time to harvest and store hardwood cuttings, produce suitable quantities of native seed, and/or grow-out container stock.

2. Locally adapted, genetically appropriate native plant materials are the first choice for use in revegetation, restoration and rehabilitation, where timely natural regeneration of the native plant community is not likely to occur. Acquire native seed or plant sources as close to the watershed as possible.
3. Non-native, non-invasive plant species may be used in the following situations: (1) when needed in emergency conditions to protect basic resource values (e.g., soil stability, water quality, and to help prevent the establishment of invasive species), (2) as an interim, non-persistent measure designed to aid in the re-establishment of native plants, (3) if native plant materials are not available and/or are not economically feasible, and (4) in permanently altered plant communities.
4. Under no circumstances shall non-native invasive plant species and/or noxious weeds be used for revegetation. All seed used will be certified weed-free.
5. Newly planted and/or seeded areas should be protected from animals and activities that may prevent, retard, or slow the establishment and recovery of native vegetation. Site-specific measures may include fences, hinging/jackstrawing, closing areas to vehicles, and/or temporarily changing grazing regimes until the desired condition is sufficiently achieved.

Cultural Resources

The following Standard Resource Protection Measures shall be used, as identified in the *Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Processes for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region* (USFS 2018, as amended).

1.0 Class I: Avoidance

The Heritage Program Manager or delegated Heritage Program staff (HPM/DHPS) shall exclude historic properties from areas where activities associated with undertakings will occur, except where authorized below.

- 1.1 Proposed undertakings shall avoid historic properties. Avoidance means that no activities associated with undertakings that may affect historic properties, unless specifically identified in this Programmatic Agreement, shall occur within historic property boundaries, including any defined buffer zones (see clause 1.1(a), below). Portions of undertakings may need to be modified, redesigned, or eliminated to properly avoid historic properties.
 - (a) Buffer zones may be established to ensure added protection where HPM/DHPS determine that they are necessary. The use of buffer zones in avoidance measures may be applicable where setting contributes to property eligibility under 36 CFR 60.4, or where setting may be an important attribute of some types of historic properties (e.g., historic buildings or structures with associated historic landscapes, or

traditional cultural properties important to Indians), or where heavy equipment is used in proximity to historic properties.

- (1) The size of buffer zones must be determined by HPMs or qualified Heritage Program staff on case-by-case bases.
- (2) Landscape architects and qualified Heritage Program staff may be consulted to determine appropriate view sheds for historic resources.
- (3) Indian tribes, or their designated representatives, and/or Native American Traditional Practitioners shall be consulted when the use or size of protective buffers for Indian traditional cultural properties needs to be determined.

1.2 Activities within historic property boundaries will be prohibited with the exception of using developed Forest transportation systems when HPMs or qualified heritage professional recommends that such use is consistent with the terms and purposes of this agreement, where limited activities approved by HPM or qualified heritage professional will not have an adverse effect on historic E-3 properties, or except as specified below in sections 2.0 and 3.0 of Appendix E.

1.3 All historic properties within Areas of Potential Effect (APEs) shall be clearly delineated prior to implementing any associated activities that have the potential to affect historic properties.

- (a) Historic property boundaries shall be delineated with coded flagging and/or other effective marking.
- (b) Historic property location and boundary marking information shall be conveyed to appropriate Forest Service administrators or employees responsible for project implementation so that pertinent information can be incorporated into planning and implementation documents, contracts, and permits (e.g., clauses or stipulations in permits or contracts as needed).

1.4 When any changes in proposed activities are necessary to avoid historic properties (e.g., project modifications, redesign, or elimination; removing old or confusing project markings or engineering stakes within site boundaries; or revising maps or changing specifications), these changes shall be completed prior to initiating any project activities.

1.5 Monitoring by heritage program specialists may be used to enhance the effectiveness of protection measures. The results of any monitoring inspections shall be documented in cultural resources reports and the NRM Heritage database.

2.0 Class II: On-Site Historic Property Protection Measures

HPM/DHPS may provide written approval for an undertaking's activities within or adjacent to the boundaries of historic properties based on professional judgment that such activities will not have an adverse effect on historic properties, or under carefully controlled conditions such as those specified below. All activities performed under Section 2.0 (Standard Protection Measures)

must be documented in inventory or other Heritage Program Reports (HPMs), or other compliance reports prepared pursuant to this Programmatic Agreement.

2.1 The following historic property protection measures may be approved for undertakings under the conditions detailed below:

- (d) Placement of barriers within or adjacent to site boundaries to prevent access to or disturbance of deposits or historic features, or for protection of other sensitive resources on-site, when such barriers do not disturb subsurface deposits or lead to other effects to the site.
 - (1) Non-intrusive barriers: wooden and other barriers anchored with rebar; rocks/boulders or other items placed on the surface; weed-free straw bales or straw bales anchored with rebar; or other nonintrusive barriers approved by HPMs or qualified Heritage Program staff.
 - (2) Fencing: “T”-post fencing; snow fencing; orange highway-type fencing; or other fencing approved by HPMs or qualified Heritage Program staff.
- (f) Installation or placement of erosion control devices, ditches, features or other treatments within site boundaries when such measures are reviewed by the HPM/DHPS and hydrologist or soil scientist, and HPM approves their use as unlikely to affect the integrity of a historic property.

If applied protection measures prove inadequate or the project cannot be modified to protect sites, any potentially affected sites would, prior to project-related impacts, be evaluated for eligibility for listing in the National Register of Historic Places. Mitigation plans (such as data collection) would be developed if appropriate.

In the event that either cultural resources are discovered, or historic properties are inadvertently affected, during implementation of this undertaking, all work shall stop until the situation can be assessed by a qualified archaeologist and reported to the HPM, or assessed by the HPM. The Forest will submit written notification describing the circumstances of the discovery to the Regional Heritage Program Leader and State Historic Preservation Officer within two working days (e.g., letter or email notification). Forests will provide written reports describing the status or resolution of the discovery/inadvertent effect every six months until it is resolved (Section 7.10 Discoveries and Inadvertent Effects, (a) USFS 2018).

Should inadvertent effects to or unanticipated discoveries of human remains be made during this undertaking, the County Coroner (California Health and Safety Code 7050.5(b)) or Sheriff if ex officio Coroner (Nevada Revised Statutes 259) shall be notified immediately. If the remains are determined to be Native American or if Native American (Indian) cultural items pursuant to the Native American Graves Protection and Repatriation Act are uncovered, the provisions of the Native American Graves Protection and Repatriation Act and its regulations at 43 CFR 10 and ARPA at 43 CFR 7 shall be followed on federal lands. (Section 7.9 Human Remains, (a) USFS 2018).

Hydrology/Soils

1. All applicable Best Management Practices (BMPs) would be implemented. BMPs are described in Water Quality Management for Forest System Lands in California, Best Management Practices (USDA FS, 2011), National Best Management Practices for Water Quality Management on National Forest System Lands – Volume 1 (USDA Forest Service, 2012) Soil and Water Conservation Handbook (USDA FS, 2011), Soil standards and guidelines established according to the Region 5 Sierra Nevada Forest Plan Amendment, and the Lassen National Forest LRMP would be implemented at applicable project sites.
2. Specific sediment barriers would be installed and maintained throughout any disturbance area, where there would be a risk of sediment reaching a water feature from project activities.
3. Disturbance of riparian management zones² (RHCAs/RCAs) would be limited to the minimum necessary to accomplish the purpose and need. This includes (but is not limited to) minimizing operation of mechanical equipment outside the road prism. Equipment such as cranes would be operated from the existing roadway surface to the extent practicable.
4. Erosion control measures would be deployed as needed, especially in areas of newly disturbed soil. These measures may include (but are not limited to) spreading of pine needles and woody debris, spreading of weed-free grass seed and/or placement of straw wattles on exposed soils. Once an area is covered by new vegetation, such measures are not expected to be necessary. A Lassen National Forest Hydrologist or Soil Scientist would make these determinations.
5. Riparian species (alder, willow, cottonwood, aspen, etc.) would not be removed to the extent practicable.
6. No storage of fuels or other toxic materials within RHCAs/RCAs. No refueling of equipment would occur within RHCAs/RCAs unless no other alternative exists. If water-drafting, vehicles would contain petroleum-absorbent pads to be placed under vehicles in the event of leaks.
7. Excavated material will be reincorporated into the site project area.

Aquatics

1. Within the project area, no potential sites for stream crossing replacement/in channel activities are known to be occupied by any federally listed aquatic species. If federally listed aquatic species are found at a site during the planning stages, no activities will be

² Riparian and aquatic ecosystems receive special consideration through the designation of riparian management zones. The riparian management zones are a land allocation of variable width depending on the associated water feature and/or other criteria. Within the project area, these zones are referred to as Riparian Habitat Conservation Areas (RHCAs) in the anadromous fish-producing watersheds and Riparian Conservation Areas (RCAs) outside the anadromous fish-producing watersheds (e.g. Feather River system).

proposed at the occupied site (e.g. for anadromous fish and Sierra Nevada yellow-legged frog). If any federally listed aquatic species are observed at time of implementation, activities will cease and the Forest Service will contact the applicable agency (National Marine Fisheries Service or United States Fish and Wildlife Service) to determine course of action; re-initiation of consultation may be required.

2. At sites within the Lassen National Forest estimated range of the Cascades frog, foothill-yellow legged frog and Sierra Nevada yellow-legged frog (SNYLF), pre-implementation amphibian surveys will be conducted in water features during the planning stages as well as prior to the commencement of crossing replacement activities or other activities involving in channel disturbance. Should the Cascades frog or foothill yellow legged frog be present at time of implementation, steps to avoid or minimize disturbance to individuals will be taken in coordination with the California Department of Fish and Wildlife (CDFW).
3. Any culvert identified as a potential barrier to fish passage will be considered for replacement only after the water features associated with the site have been appropriately screened to ensure potential benefits of the barrier to amphibians aren't compromised.
4. All stream crossing improvement sites will be evaluated for presence of freshwater mussels. If present within the disturbance area, efforts will be taken to avoid altering the occupied habitat. If re-location of individuals is deemed necessary, proper protocols and procedures would be followed.
5. Fish and other aquatic vertebrates encountered within the project area would be netted and removed to a location outside the project work area prior to dewatering. Block nets would be placed in the stream above and below the project area to prevent aquatic organisms from potentially re-entering the project area during implementation. Block nets would be removed from the stream following project implementation.
6. If water pumps are used to divert stream flows, screens would be placed on all pump intakes to minimize risk of aquatic organism entrainment within the pumps.

Aquatic Invasive Species

1. Prevention and control measures will be incorporated into project planning, management activities and operations to prevent new introductions or contribute to spreading of invasive aquatic species into waterbodies on National Forest System (NFS) lands.
2. All equipment and vehicles (FS and contracted) to be used in a water feature for project implementation shall be inspected and free of invasive aquatic species prior to implementation.
3. Prior to entering or moving between aquatic habitats, field gear will be cleaned, decontaminated, and/or fully dried.

Anadromous fish-producing watersheds

1. All applicable design parameters identified in the Biological Assessment of Proposed and Listed Threatened and Endangered Species of Anadromous Fish for Non-Routine Road Maintenance Activities and Construction Activities on Existing Roads (Sept 16, 1998, amended Oct 3, 2005), as well as applicable measures identified in the National Marine Fisheries Services (NMFS) Biological Opinion (May 5, 1999) for that biological assessment, and as amended (Feb. 21, 2006; Nov 6, 2007), are incorporated by reference. This includes an outline of the interdisciplinary team (IDT) process to be used to determine the appropriate design actions.
2. For projects with activities determined to be within the scope of the above referenced document, the tiering process outlined will continue to be used to complete site specific consultation, when applicable, with NMFS.

Recreation

1. Notice of detours and/or road closures would be given to the public via road signs and news releases in newspapers and at visitor centers.

Transportation

1. The existing forest transportation system would be utilized to provide access to the project area and road maintenance would be performed as needed.
2. Only water will be used for dust abatement.

Wildlife

Northern Goshawk

1. Implementation within Goshawk Protected Activity Centers would not be allowed from March 1st through September 15th unless surveys indicate the Protected Activity Centers are not occupied.

California Spotted Owl

1. If a Spotted Owl nest is detected, a 200-acre Spotted Owl Protected Activity Center would be established around the nesting site.
2. Within ¼ mile of a Protected Activity Center, a limited operating period would be in effect from March 1st through August 31st.

Bald eagle

1. If a nesting bald eagle is located or known to occur within ½ mi of project site, a limited operating period would go into effect from January 1st to August 1st.

Marten

1. Implementation within marten den site land allocations would not be allowed from March 1st through July 31.

Fisher

1. Implementation within fisher den site land allocations would not be allowed from March 1st through June 30

Greater Sandhill Crane

1. Implementation within 0.25 miles of a sandhill crane nest would not be allowed from April 1 through August 1, unless surveys confirm that sandhill cranes are not breeding.

Gray Wolf

1. Maintain a limited operating period (LOP) prohibiting implementation of activities from March 1 through August 15 within 1 mile of wolf activity indicative of a potential den location or a pup rendezvous site.